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First Steps Taken at New Repeater Site

Initial steps have been taken to prepare for installation of the club's main VHF repeater at the former analog transmitter site of WTEN located on the Helderberg Mountains south of Albany. They included a site visit to assess requirements for the repeater's antenna and associated feedline. In addition, EGARA installed an Internet hotspot in the building and two security cameras which monitor both the access gate and the building's interior.

The club has also been actively involved in acquiring tower sections that will be used to support the system's antenna. One source contacted by the club has indicated it has both Rohn 25G and 45G tower pieces available for refurbishment at a reasonable cost. Preparation will likely require the sections to be sanded or wire brushed and then repainted. This will probably be set up as a club project once the sections are secured.

In addition, EGARA is also planning on purchasing a new controller for the repeater which will allow for expanded functionality and the incorporation of EchoLink, permitting access by hams all over the world via the Internet.

The timetable for the repeater installation remains fluid and will depend on securing the items mentioned, as well as the weather.



WTEN Chief Engineer Steve Pingelski (left) looks on as club members survey the station's former analog transmitter building in the Helderberg Mountains.

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Club's January Meeting Date Changed

EGARA's January membership meeting will be held changed to *Thursday, January 9th* to avoid a scheduling conflict with Rensselaer County Search and Rescue. The meeting will be at the regular time of 7 pm.

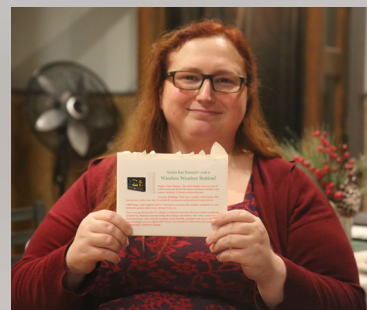


The club will also be scheduling a cleaning session for the building in early January and will notify members by email of the date and time.

Dues for 2025 will also be accepted at the meeting. As always, they can also be paid online at www.EGARA.org/paydues.

Membership Meeting - Date Change! - Thursday, January 9, 2025 - 7 pm

EGARA & Annual Holiday Party Picture Gallery



On the Beam News & Notes

FCC Exam Session Set for February 8th

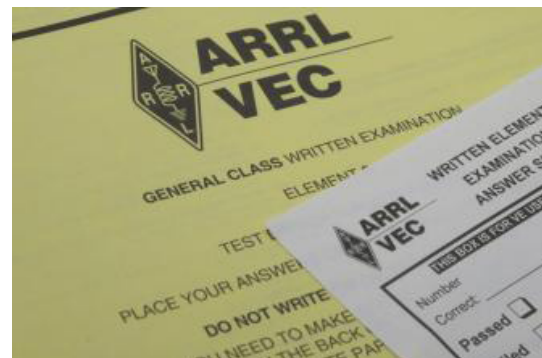
EGARA's Volunteer Examiner team will administer FCC license exams on Saturday, February 8th at the East Greenbush Town Library. The exam session will run from 1:30 pm to 4:30 pm and offer exams for all license classes -- Technician, General and Amateur Extra. While walk-ins are always welcome at any Egara test session, it is recommended that they reserve a spot by emailing W2RBJ@outlook.com.

License applicants **MUST** have a CORES registration number and valid email address before taking their test and will need to submit a \$15 test fee. They also need to bring a valid ID and a copy of their current license if they are upgrading to a higher class.

Complete information can be found on the club's website at: <https://www.egara.org/ve-exams-sessions>.

The club's VE team now submits all test results electronically, allowing new Amateur licenses and upgrades to be processed quickly and efficiently, usually within three business days. However, exam applicants must submit the \$35 license fee to the FCC before their licenses will be issued. Successful test applicants receive an email from the FCC that contains a link to make the payment.

Pre-registration is also recommended in case winter weather forces the test session to be postponed.



2025 ARRL Foundation Scholarships – Final Weeks to Apply



The ARRL Foundation Scholarship Program continues to accept applications for the 2025 scholarship cycle. The application period is open until 12:00 PM Eastern Standard Time on January 6, 2025. The scholarships are available to eligible amateur radio operators pursuing higher education. There are more than 100 scholarships ranging from \$500 to \$25,000.

The scholarships have been established by generous donors and can help fund a portion of a ham's education. Descriptions of the scholarships may be found at www.arrl.org/scholarship-descriptions.

ARRL Director of Development Kevin Beal, K8EAL, is encouraged by the program. "Hams are always learning, and being able to honor that dedication to education through generously funded scholarship programs helps relieve some of the financial burden that students can experience," he said.

All applicants must submit a completed online application. Transcripts and any additional required documents must be submitted with the application and not emailed separately. A number of scholarships require additional documents, such as a letter of recommendation from a sitting officer of an ARRL-affiliated club. Applications without accompanying transcripts and additional required documents (if applicable) will not be considered. Scholarship recipients will be notified by early June 2025. Awards are mailed directly to recipients' schools and will be awarded in July 2025.

EGARA December Meeting Minutes

- The December membership meeting was replaced by the club's annual Christmas Party which was held at Brown's Brew Pub in Troy on December 12th.
- A total of 19 club members attended the holiday gathering, with festivities starting at 6 pm.
- President Bryan Jackson, W2RBJ welcomed everyone and each of those in attendance took time to introduce themselves and give their call sign.
- He also gave a brief update on the progress being made to restore the club's main VHF repeater at the former analog transmitter site of WTEN in the Helderberg Mountains south of Albany. (see related story on page 1).
- The club plans to participate in Winter Field Day on the weekend of January 25-26. Members will be asked for their input and suggestions for running the event during the club's January meeting.
- Members were reminded that the January meeting will be moved to Thursday, January 9th at 7 pm to avoid a scheduling conflict at the Rensselaer County Search and Rescue Building.
- Treasurer Pete Brickman, KD2YLG, gave an update on club finances and reminded members that dues for 2025 can either be paid in person at a club meeting, or online at the club's website.
- Raffle tickets were provided to each of those in attendance and drawings were held for the various holiday gifts offered by the club. The winners included:
 1. Lauren Nodonly, W2NYX, Dual Band HT Radio
 2. Andrew Sullivan, KC2WWJ, Dual Band HT Radio
 3. Don Mayotte, KB2CDX, Portable Solar Charger
 4. David Jaegar, Jr., K2DEJ, one-year EGARA Dues Credit
 5. Peter Brickman, KD2YLG, Wireless Cell Phone Charger
 6. Avery Sudol, K2AVY, Home Weather Station
 7. Shannon Hildenbrandt, Hannaford Gift Certificate
 8. Jim Pendolino, KC2HRO, Remote Control Drone
- The Holiday Party ended at approximately 9 pm.



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www.EGARA.org/pay-dues

New Year's Day Brings Straight Key Event



ARRL Straight Key Night will be January 1, 2025, from 0000 UTC through 2359 UTC.

This 24-hour event is not a contest but rather a day dedicated to celebrating our CW heritage. Participants are encouraged to get on the air and simply make enjoyable, conversational CW QSOs. The use of straight keys or bugs to send CW is preferred.

There are no points scored and all who participate are winners. All authorized amateur frequencies may be used but activity has traditionally been centered on the HF bands.

Entries for Straight Key Night must be received by January 3, 2025. Votes for “Best Fist” and “Most Interesting QSO” will be tabulated and included in the results.

Send your information to straightkey@arrl.org or by mail to ARRL Straight Key Night, 225 Main Street, Newington, Connecticut 06111. For more information, contact contests@arrl.org or (860) 594-0232.

EGARA & WINTER FIELD DAY

Winter Field Day (WFD) is set for January 25-26 and Egara is planning to participate this year. Plans will be discussed at the club's January membership meeting, with the initial proposal being to operate one station from 11 am to 5 pm on Saturday, January 25th. Set up will likely begin around 9 am.

The event offers the opportunity for club members to set up field operations and connect with other Amateur operators worldwide.

Winter Field Day is organized by the Winter Field Day Association and provides the chance to set up and operate in more adverse weather conditions. The first WFD was held in January 2007.

The overall goal is to improve preparedness for disasters and enhance operational abilities. There are no restrictions on frequencies, allowing the use of HF, VHF, or UHF bands while employing voice, CW, and digital transmissions. However, repeater contacts are not allowed.

EGARA will operate as a Class “I” or Indoor station. This is defined as any station operating away from Home but from inside an insulated, weather-protected building or structure on a permanent foundation.

The event also encourage a range of activities, including the use of non-commercial power sources, the deployment of multiple antennas, establishing satellite contacts, and more.

EGARA members will be urged to sign up for the event, both to help schedule operations and so the club can make sure it has enough food and beverages on hand for those who participate.



Could Amateur Radio Save Us if the Kessler Syndrome Ever Came True?

For decades, nations around the world have been sending thousands upon thousands of satellites and other objects into orbit, where they have become an integral component of modern society. From hundreds of miles above Earth, satellites can help scientists make observations about our planet and the surrounding universe, or even provide us access to television and entertainment.

But what happens when those aging satellites become defunct and are no longer active?

Truth is that many of those objects - or fragments of them - are still there, languishing above Earth in an ever-expanding space junkyard. Because they're expensive to remove, retired satellites are often left in a low-Earth orbit, where their presence poses a growing threat to both future satellite launches and crewed space missions, according to NASA. And all of this debris floating around in space could lead to a theoretical scenario known as the Kessler Syndrome -- a theoretical scenario that says left unchecked, the multiplying detritus and subsequent cascade of collisions could make Earth's orbit unusable for space travel and could knock out critical communication systems.

Just this past November, an incoming piece of space junk prompted the International Space Station to take action to maneuver itself out of harm's way. A Russian cargo ship docked at the space station fired its thrusters for more than five minutes to "provide an extra margin of distance" for the hunk of debris, NASA said. While the inbound object, which was debris from a defunct meteorological satellite, was not necessarily on a collision course with the station, NASA said the evasive maneuver provided a little more cushion for it to safely whizz by.

Here's what to know about space junk, why it's a problem and what's being done about it.

What is space junk?

Also called space debris, space junk is comprised of non-operational satellites and other human-made objects that continue to hurtle around Earth's orbit long after they served their purpose.

Spacecrafts, spent rocket boosters and even astronauts' lost tool bags can combine with old satellites to create a halo of orbital debris that lasts for decades.

Since the dawn of the space age in the 1950s, humankind has launched around 50,000 tons of material into, according to the ESA, which cited data from the U.S Space Surveillance Network. The total mass of all space objects in orbit is estimated to be more than 13,000 tons as of September 2024. And of the 19,590 satellites launched into space since 1957, 13,230 of them - 10,200 of which remain operational - continue to whiz around in space at high speeds as of September, the space agency says.

And the pace of satellite launches is quickening.



This picture taken on Jan. 2, 2016 shows a metal ball that landed in the northern province of Tuyen Quang in Vietnam. Three large metal balls believed to be space junk landed in the country's remote north over the course of a week in 2016, Army officials said.

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Why is space junk a problem?

When combined with all of the satellites that have been there for decades, the ESA warns that the rising threat of collisions puts humanity's future in space into question. In a 2009 incident, two satellites crashed into one another over Siberia. Not only were both satellites - one of which was still active - destroyed, but the collision created a whole bunch more debris in the process, according to a report at the time from the American Scientist.

Up until December 2022, the International Space Station had moved out of the way of space junk 32 times since 1999, according to a 2022 quarterly report from NASA. By October 2023, that figure had jumped to 37 orbital debris avoidance maneuvers, including two in August of that year alone. When the ISS maneuvered away from space debris in November this year, it marked its 39th Pre-Determined Avoidance Maneuver.

It's also not uncommon for some of those objects to crash back into Earth, scientists say. For example, Earlier this year, a family in Naples, Florida, filed a claim against NASA for more than \$80,000 in damages to their home after a chunk of space debris from the International Space Station tore through their roof.

All of this adds up to the likelihood, the ESA warns that the Kessler Syndrome could become reality.

"We are seeing a dramatically increased use of space, but still insufficient technology to prevent the risks that follow," Holger Krag, ESA's head of Space Safety, says.

What are NASA, ESA, others doing about space debris?

The movement to crack down on the hazardous debris whizzing through outer space has seemed to strengthen in recent years.

Many scientists have for years sounded the alarm about Earth's rapidly overcrowding orbit, but now the European Space Agency, NASA and other organizations across the globe are beginning to take more concrete action.

Last year, ESA adopted the Zero Debris Charter, which seeks a global commitment to nearly eradicate so-called space junk by 2030.

"As space infrastructure has become the backbone of our modern society, the proliferation of space debris is threatening our way of life," Director General Josef Aschbacher said in a statement at the time. "Now is the time to act as a community to channel our collective efforts."

In the United States, NASA has its own Orbital Debris Program based in Houston, Texas tasked with creating less orbital debris and designing equipment to track and remove space junk.

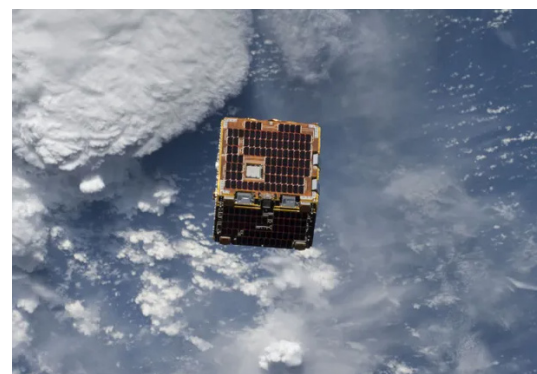
Amateur Radio to the Rescue?

While the reality of the Kessler Syndrome actually happening is a long shot, it does highlight the vulnerability the world has placed on technology and its communication systems. But it is one more potential failure point, as are the possibility of widespread power failures, Internet outages and the effects a high-power solar Electro Magnetic Pulse could have.

All of this once again brings up the well-known idiom: "When all else fails... there's Amateur Radio."



While smaller fragments of debris are vaporized by the heat of atmospheric re-entry, larger pieces survive the fall. This picture from May 2014 shows space debris from a Russian rocket that fell in northeast China's Heilongjiang province.



This NASA image shows the NanoRacks-Remove Debris satellite, designed to explore using a 3D camera to map the location and speed of orbital debris or "space junk."

ARRL Awards Recognize Excellence in Ham Radio

It probably isn't hard to think of someone you know who goes above and beyond in service to Amateur Radio, their club, their fellow hams, or their community. Volunteers are the very core of the Amateur Radio, and that dedication is what carries the ARRL Field Organization. Excellence in on-air operating inspires the rest of us to be better, build better, and do better.

ARRL is seeking the help of Amateurs in honoring the outstanding work done by hams, through the ARRL Service Awards. There are a host of different awards which are divided into four categories: Education Awards, Media/Public Relations Awards, Technical Awards, and Distinguished Service Awards.

Education Awards

Hiram Percy Maxim Memorial Award: Named for the Founding President of ARRL, this award goes to a licensed radio amateur under age 21 who has made exemplary contributions to amateur radio and the local community. Nominees must be current ARRL members. Nomination deadline: March 31, 2025.

ARRL Herb S. Brier Award for Instructors and Teachers: Honoring Herb S. Brier, W9AD (SK), ARRL sponsors this award in conjunction with the Lake County (Indiana) Amateur Radio Club to recognize the very best in amateur radio instruction and recruitment. The award goes to a licensed radio amateur and ARRL member who is an ARRL-registered volunteer instructor or ARRL-registered professional classroom teacher. Nomination deadline: March 15, 2025.

Technical Awards

ARRL Microwave Development Award: This award recognizes a radio amateur or group of radio amateurs who contribute to the development of the amateur radio microwave bands. Nomination deadline: March 31, 2025.

ARRL Technical Service Award: This award recognizes a radio amateur or group of radio amateurs who provide amateur radio technical assistance or training to others. Nomination deadline: March 31, 2025.

ARRL Technical Innovation Award: This award recognizes a radio amateur or group of radio amateurs who develop and apply new technical ideas or techniques in amateur radio. Nomination deadline: March 31, 2025.

Public Relations Awards

ARRL Philip J. McGan Memorial Silver Antenna Award: Honoring Phil McGan, WA2MBQ (SK), this award recognizes a radio amateur and ARRL member who has demonstrated leadership in successfully promoting amateur radio to the public. Nomination deadline: March 31, 2025.

ARRL Bill Leonard Award: Honoring Bill Leonard, W2SKE (SK), three annual awards are given to professional journalists or journalistic teams whose outstanding coverage highlights the enjoyment, importance, and public service contribution of the Amateur Radio Service. The award is given in three media categories: audio, visual, and print. Nomination deadline: March 31, 2025.

Distinguished Service Awards

Knight Distinguished Service Award: Honoring Joe T. Knight, W5PDY (SK), the award recognizes exceptional contributions by a Section Manager to the health and vitality of ARRL. Nomination deadline: March 31, 2025 (for consideration during the July ARRL Board meeting).

George Hart Distinguished Service Award: Honoring George Hart, W1NJM (SK), the award recognizes an ARRL member's lifetime of activities within the ARRL Field Organization, including the National Traffic System and the Amateur Radio Emergency Service®. Nomination deadline: November 1, 2025.

For more information and to enter nominations, visit the ARRL website at:

<http://www.arrl.org/arrl-award-nominations>

New Zealand Updates Shortwave Service to the Pacific

RNZ Pacific — the international service of New Zealand’s public media organization RNZ — has done something rather unusual by current international shortwave broadcasting standards. Rather than shut down a shortwave transmitter site, RNZ Pacific replaced it with a new 100 kW Ampegon TSW-2100 transmitter, replacing its 33-year-old RNZ Pacific ‘Transmitter 1’ which was installed in 1989. It’s part of a project to improve RNZ Pacific’s capabilities, with the new transmitter supporting both DRM digital and analog operation.” The estimated cost to the New Zealand government was \$2.4 million (U.S.)

Why did RNZ Pacific take this step? It may seem an overstatement to characterize RNZ Pacific’s installation of a new radio transmitter as a life-or-death decision. But for those in the region who rely on its broadcasts during natural disasters — particularly on small islands with weak broadcast resources of their own — RNZ Pacific is an information lifeline. This has been especially true since 2017, when Australia cut the last of its international shortwave services to save money.

Fortunately for RNZ Pacific’s far-flung audience, this broadcaster’s shortwave service appears to be safe for the foreseeable future. “RNZ, under its charter, must ‘include an international service to the South Pacific in both English and Pacific languages,” said RNZ Technology Officer Mark Bullen.

As a result, RNZ has been delivering shortwave broadcasts into the South Pacific region from the Rangitaiki transmitter site since 1990. “Prior to that the service was transmitted from our Titahi Bay site in Wellington, which opened on Monday Sept. 25, 1948,” he said.

To abide by its charter, RNZ Pacific works with media partners across the Pacific to support the reception and rebroadcasting of its content in 22 nations.



A drone view of the RNZ Pacific shortwave site at Rangitaiki, New Zealand

As well, “as part of our lifeline utility role in New Zealand Aotearoa [the Māori-language name for New Zealand], we take on the role of ensuring that we can broadcast lifesaving information to the Pacific region,” said Bullen.

“Being able to deliver from outside the region ensures that it can be resilient, regardless of the event impacting the Pacific, whether it be cyclones or other causes resulting in loss of infrastructure. Since the other nearby shortwave service from Australia ended in 2017, this has reinforced our role as a shortwave service provider in the region.”

RNZ Pacific’s decision to include Digital Radio Mondiale capability in its new shortwave transmitter was designed to do more than deliver content to consumer DRM receivers.

(continued on page 10)

New Zeland Updates its Shortwave Service...

“We have media partners that choose to rebroadcast our DRM service within their countries,” Bullen said. “Unlike analog SW, DRM delivers high-quality digital audio that is suitable for rebroadcasting. Thankfully, our existing Thales shortwave 100 kW transmitter also can deliver both analog and/DRM services. So this gives us flexibility and resilience across RNZ Pacific’s two transmitters to simulcast if required or to perform maintenance on one of our transmitters.”

RNZ Pacific’s new Ampegon shortwave transmitter provides the same transmission power as the 1989 Thomson 100kW analog-only transmitter that it replaced. Listeners are not likely to notice much difference, unless, of course, they are tuning in using DRM digital radios.



RNZ's new 100 KW Ampegon shortwave transmitter system

“The coverage is unchanged, as there have not been any modifications or additions to the antenna system,” said RNZ engineer Steve White.

“The gains for RNZ Pacific lie in ensuring that the service is reliable going forward and that we now have redundancy for our DRM service,” Bullen said.

The new transmitter is performing as specified. “Now that we have two fully operational transmitters again, we broadcast in analog mode using the second transmitter during our DRM broadcasts so that all listeners can receive the service,” White said.

The old Thomson transmitter has been dismantled, with useful parts recovered for spares. “Parts of the transmitter were also sent to our Titahi Bay transmitter site in Wellington, where they will be put on display next to one of the original 1948 shortwave transmitters,” said White.

The new transmitter appears to be delivering the kind of international reach that the broadcaster was looking for, based on reception reports that listeners send to RNZ Pacific daily as well as data from its own monitoring receivers in the Pacific region.

“We saw recently that the signal had been picked up by a pocket radio in Plymouth, Minnesota — some 13,000 kilometers [about 8,000 miles] away from the Rangitaiki site,” White said. “This suggests that the new transmitter is operating well.”

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CALENDAR

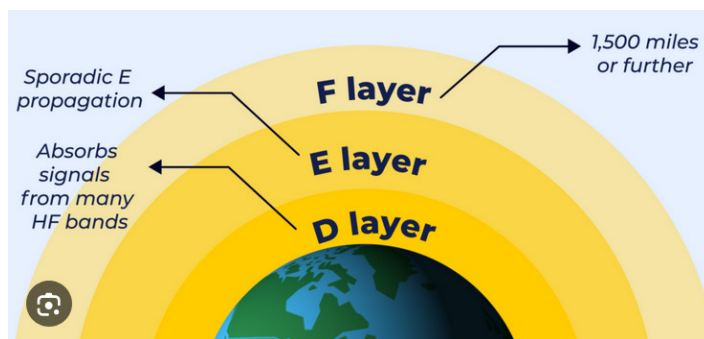
January 9, 2025 - Regular Monthly Club Membership Meeting - Rensselaer Co. Search and Rescue Building

January 25-26, 2025 - Winter Field Day

February 8, 2025, 1:30 pm - FCC Exam session, Easat Greenbush Town Library. Applicants should RSVP to: W2RBJ@outlook.com

Pro Tip: Using Propagation Layers

Amateur Radio depends on various atmospheric layers to propagate the signals you send and receive. Here's a quick visual guide:



D Layer: The lowest of the ionospheric layers. 25-55 miles up called the "daylight layer"

E Layer: The next ionospheric layer which is about 55-90 miles up also referred to as a Daylight layer

F1 Layer: Second to the highest ionospheric layer is about 90-150 miles above the Earth

F2 Layer: The highest layer that is over 250 miles above the earth

The East Greenbush Amateur Radio Association

Organized in 1998, by Bert Bruins, N2FPJ, (SK) and Chris Linck, N2NEH, the East Greenbush Amateur Radio Association, an ARRL affiliate, is committed to providing emergency services, educational programs, and operating resources to amateur radio operators and residents of the Capital Region of New York State. The club station is W2EGB. The club also has several VHF and UHF repeaters open to club members and the public.



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Contact Bryan at: W2RBJ@Outlook.com

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